

AMENDMENTS TO THE CLAIMS

1 1. (Currently Amended) A system for interconnecting a plurality of
2 computing devices comprising:

3 a shared communication medium;

4 a plurality of transceivers having a first and second port, ~~the~~said first port for
5 connection to one of a plurality of computing devices and ~~the~~said second port for
6 connection to said shared communication medium, each of said plurality of
7 transceivers further comprising a transmitter and a receiver for transmitting and
8 receiving time domain signals representing data, said time domain signals
9 comprising a plurality of modulated carriers of predetermined frequency, over
10 said shared communication medium to at least any one of other said plurality of
11 transceivers;

12 said receiver having a signal transformer for generating a frequency domain
13 signal from ~~the~~said received time domain signal, and a frequency domain
14 equalizer for operating on said frequency domain signal, said frequency domain
15 equalizer comprising a single tap filter for each carrier of said plurality of
16 modulated carriers received by said receiver~~transceiver~~;

17 said transmitter transmitting at least one known symbol on at least two non-
18 adjacent carriers and transmitting data symbols on carriers between said at least
19 two non-adjacent carriers, and wherein said frequency domain equalizer generates
20 said filter taps for ~~each~~said each carrier in response to said at least one known
21 symbol on said at least two non-adjacent carriers.

1 2. (Currently Amended) The system of claim 1 wherein said transmitter transmits
2 said at least one known symbols~~symbol~~ on every Nth carrier, where N is any integer

3 greater than 1.

1 3. (Currently Amended) The system of claim 1 wherein said frequency domain
2 equalizer generates said filter taps by interpolating points between the received said at
3 least one known symbol.

1 4. (Currently Amended) The system of claim 1 wherein said frequency domain
2 equalizer updates said filter taps by calculating averages of said at least one known
3 symbols for each of said at least two non-adjacent carriers and interpolating points
4 between said averages.

1 5. (Currently Amended) The system of claim 4 wherein said at least two non-
2 adjacent carriers are equally spaced among said plurality of modulated carriers.

1 6. (Currently Amended) The system of claim 1 wherein said transmitter does not
2 transmit energy in a Plain Old Telephone Service (POTS) the POTS frequency range.

1 7. (Currently Amended) The system of claim 1 wherein each of said plurality of
2 transceivers ~~said multi-carrier modem~~ selectively transmits on fewer than all of said
3 plurality of predetermined frequencies.

1 8. (Currently Amended) A network adapter device for connecting a computing
2 device to a shared electrical signaling medium comprising:

3 a first physical interface for connection to a computing device;

4 a second physical interface for connection to a shared electrical signaling
5 medium; and

6 a transceiver connected to ~~the~~ said first and second physical interfaces for
7 transmitting and receiving data on said first physical interface and transmitting
8 and receiving modulated multi-carrier data bursts over said second physical

9 interface, wherein each of said modulated multi-carrier data bursts
10 comprises a plurality of frames, said transceiver including a signal transformer for
11 converting received time domain signals to frequency domain signals, and a
12 frequency domain equalizer connected to said signal transformer for processing
13 said frequency domain signals, said frequency domain equalizer comprising a
14 single tap filter for each carrier of said modulated multi-carrier data ~~bursts~~
15 received by said transceiver;

16 wherein said frequency domain equalizer generates said equalizer taps for each
17 carrier by interpolating a channel response from received known symbols.

1 9. (Original) The network adapter device of claim 8 wherein said first physical
2 interface is a standard computer internal bus interface.

1 10. (Original) The network adapter device of claim 8 wherein said first physical
2 interface is a standard external bus interface.

1 11. (Original) The network adapter device of claim 8 wherein said equalizer taps
2 are updated by averaging received known symbols and re-interpolating a channel impulse
3 response.

1 12. (Original) The network adapter device of claim 8 wherein said signal
2 transformer performs a discrete Fourier transform.

1 13. (Currently Amended) The network adapter device of claim 8 wherein said
2 transceiver operates in a frequency range above ~~at the~~ frequency range of a Plain Old
3 Telephone Service (POTS)~~POTS services~~.

1 14. (Currently Amended) The network adapter device of claim 8 wherein said multi-
2 carrier transceiver utilizes a plurality of predetermined carrier frequencies and selectively
3 transmits on less than all of said plurality of predetermined carrier frequencies.

1 15. (Currently Amended) A method of transferring data among a plurality of
2 computing devices connected to a shared communication medium comprising the steps
3 of:
4 receiving data from a computing device;
5 mapping the data to a plurality of sets of signal points where each signal point is
6 assigned a carrier, and including predetermined signal points assigned to
7 predetermined carriers in at least one set where the signal points are spaced at an
8 interval of every N^{th} carrier, wherein N is an integer greater than 1;
9 transforming each signal point set to a time domain signal;
10 transmitting the time domain signals to a plurality of computing devices over a
11 shared communication medium;
12 receiving the time domain signals from the shared communication medium;
13 converting the time domain signals to frequency domain signals;
14 interpolating equalizer filter taps based on the predetermined signal points; and
15 filtering said frequency domain signals using the interpolated equalizer filter taps.

1 16. (Original) The method of claim 15 where the step of transforming includes
2 performing a frequency domain to time domain transform.

1 17. (Currently Amended) The method of claim 15 wherein the interval of every
2 N^{th} carrier is an integer selected from 2, 4, 6, and 8.

1 18. (Currently Amended) The method of claim 15 further comprising the step of
2 updating the equalizer after every frame using the most recently received set of ~~included~~
3 ~~predetermined~~ signal points.

- 1 19. (Currently Amended) The method of claim 15 wherein the shared
2 | communication medium is standard Plain Old Telephone Service (POTS) POTS wiring.
- 1 20. (Original) The method of claim 15 wherein the predetermined signal points
2 are assigned to predetermined carriers in every frame.